International Working Group
Landau Network - Centro Volta

2012 US G8GP Presidency

International Working Group (IWG)* Discussions on: Global Partnership (GP) – 2012 and Beyond, and on Global Scientist Engagement

Meetings under the US Chair of GP
Amb. Bonnie Jenkins

Note prepared by the IWG Executive Secretariat

1st IWG-GP WG Sideline Meeting, January 23rd, 2012 –Washington, DC

2nd IWG-GP WG Sideline Meeting, March 12th, 2012 – Boston, MA

3rd IWG-GP WG Sideline Meeting, April 16th, 2012 – Miami, FL

IWG-NNSA Workshop, September 13th – 14th , 2012 – Como, Italy

4th IWG-GP WG Sideline Meeting, October 22nd , 2012 – Pleasanton, CA

The views reflected in this document are those of the authors
and do not necessarily reflect the US government position.

*The IWG is an international think-tank at the Landau Network Centro Volta (LNCV) premises in Como - Italy, supporting, assessing, and forecasting the GP process, and a clearing house on issues related to the human dimension of proliferation.

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International Working Group (IWG) Discussion: Global Partnership (GP) – 2012 and Beyond

January 23, 2012

U.S. Department of State Washington, DC

AGENDA

8:30 am **Registration**

9:30 am **Welcome and Introduction / IWG Priorities for 2012**

Ambassador Bonnie Jenkins, IWG Chair and Coordinator, Threat Reduction Programs, DOS

Maurizio Martellini, IWG and Landau Network Centro Volta (LNCV)

9:45 am **Panel on Global Scientist Engagement**

Chair: Maurizio Martellini, IWG and Landau Network-Centro Volta (LNCV)

Discussants: Alan Heyes, IWG and King's College-London

Ambassador Rogelio Pfirter, IWG and Former Director General OPCW

Ambassador Marcos de Azambuja, IWG and Brazilian Centre for International Relations (CEBRI)

11:15 am *Coffee break*

11:30 pm **Panel on Whole-of-Government Approach to Threat Reduction**

Chair: Brian Finlay, Stimson Center

Discussants: O'Neil Hamilton, CARICOM

Trevor Smith, Global Partnership Program and Foreign Affairs Canada

13:00 pm *Lunch break*

2:15 pm **Panel on Metrics and Sustainability and New Security Challenges**

Chairs: Jana Fankhauser, Pacific Northwest National Laboratory

Tracy Wilson, Pacific Northwest National Laboratory

Discussants: Micah D. Lowenthal, National Academy of Sciences
Giulio Mancini, IWG-LNCV
Sandro Gaycken, IWG and Freie Universitat-Berlin

3:30 pm *Coffee break*

3:45 pm **GP Engagement and Outreach**
Chair: Shawn Barber, Global Partnership Program and Foreign Affairs Canada
Discussant: Monte Mallin, National Nuclear Security Administration, U.S. Department of Energy

5:00 pm **Wrap-Up and Summary**

5:15 pm **End Meeting**

Second International Working Group (IWG) Discussion: Global Partnership (GP) – 2012 and Beyond

March 12th , 2012

Kennedy School, Harvard University
79 JFK St.
Cambridge, Massachusetts, US

AGENDA[*]

8:30 am	**Registration**
9:30 am	**Welcome and Introduction / IWG Priorities for 2012** Ambassador Bonnie Jenkins, IWG Chair and Coordinator, Threat Reduction Programs, DoS Maurizio Martellini, IWG Executive Secretary and Landau Network Centro Volta (LNCV) Secretary General
9:45 am	**The Importance of Global Scientist Engagement** Chair with remarks: Maurizio Martellini, IWG-LNCV Discussants: Ambassador Rogelio Pfirter, IWG and Former Director General OPCW Ambassador Marcos de Azambuja, IWG and Brazilian Centre for International Relations (CEBRI) Lt Gen. P.K.Singh, United Service Institution of India (USI) Prof. Anwar Nasim, Former Adviser Science COMSTECH Secretariat
11:15 am	*Coffee break*
11:30 am	**A Whole-of-Government Approach for GP Programs and Activities** Chair with remarks: Monte Mallin, National Nuclear Security Administration, US DoE Discussants: Alan Heyes, IWG and King's College Monika Lipert-Sowa, Ministry of Foreign Affairs of Poland
1:00 pm	*Lunch break*

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[*] All speakers' presentations should last no more than 6/7 minutes.

2:15 pm **Metrics: Perspectives from GP member states**

Chairs: Jana Fankhauser, Pacific Northwest National Laboratory

Tracy Wilson, Pacific Northwest National Laboratory

Discussants: Monte Mallin, Department of Energy

Maurizio Martellini, IWG-LNCV

3:30 pm *Coffee break*

3:45 pm **GP Engagement & Enhanced Approaches to Outreach**

Chair with remarks: Shawn Barber, Global Partnership Program and Foreign Affairs Canada

5:00 pm **Wrap-Up and Summary**

5:15 pm **End Meeting**

Third International Working Group (IWG) Discussion: Global Partnership (GP) – 2012 and Beyond

April 16th , 2012

United States Southern Command

Miami, Florida, US

AGENDA[*]

9:00 am	**Registration**
9:30 am	**Welcome / Setting the Context** Ambassador Bonnie Jenkins, IWG Chair and Coordinator, Threat Reduction Programs, DoS Maurizio Martellini, IWG Executive Secretary and Landau Network Centro Volta (LNCV) Secretary General
10:15 am	*Coffee break*
10:30 am	**A Whole-of-Government Approach for GP Process: The importance of private industry engagement** Chair with remarks: Brian Finlay, Stimson Center Discussants: Gerson Sher, US Industry Coalition Stanley Staz, Bionucleonics Inc. Ronald Thomason, Maritime Security Council
12:00 pm	*Lunch break*
1:00 pm	**Securing Dual Use Expertise: Toward Practical Outputs in the areas of CBRN** Chair with remarks: Micah Lowenthal, NAS Discussants: Giulio Mancini, IWG-LNCV James Le Duc, Galveston National Laboratory Paul Walker, Global Green USA
2:30 pm	*Coffee break*

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[*] All speakers' presentations should last no more than 6/7 minutes.

2:45 pm **Roundtable on GP. Building on the GPWGs and on Seoul 2012 Nuclear Security Summit Outcomes**

Chair with remarks: Ambassador Bonnie Jenkins, IWG and US DoS

Discussants: Janette Hill, USA

Anthony Thomas, Interpol

Adebayo Babajide, EEAS

Nicolas Kasprzyk, UN 1540 Committee

4:15 pm **Wrap-Up and Summary**

4:30 pm **End Meeting**

AGENDA

Second Edition of the NNSA&IWG-LNCV Workshop and Roundtable on

"Science Collaboration and Security": Emerging CBRNCy Challenges and Threat Reduction Programs Beyond 2012

Villa Erba, Cernobbio-Como, Italy

September 13-14th, 2012

Organized by

International Working Group - Landau Network Centro Volta
Como, Italy

With the support of

National Nuclear Security Administration (NNSA)
Department of Energy, Washington DC, US

Agenda

SEPTEMBER 12th

20:00 *Welcome Dinner Buffet*

SEPTEMBER 13th

8:30-9:00 **Registration**

9:00-9:45 **Welcome and Introduction by the Organizers**

Chair with addressing remarks: **Maurizio MARTELLINI**[*], Executive Secretary, International Working Group and Secretary General, Landau Network-Centro Volta (IWG-LNCV), Italy

Anne HARRINGTON, Deputy Administrator, Defense Nuclear Nonproliferation, NNSA, US

Massimo DREI, Embassy Counselor, Head of Office V, Disarmament, Arms control and non proliferation, Directorate General for political and security affairs, Ministry of Foreign Affairs, Rome, Italy

09:45-11:30 **Session 1.** ***Unilateral, Multilateral and International Governmental Approaches to Scientists Engagement (SE)***

Discussion will focus on the challenge in the context of the Post-Cold War CBRNCy threats (geographic and functional) - comprising materials, technology, and expertise- and on how the current international, multinational and national efforts, including Global Partnership (GP) activities and new thinking from the GP Member States and from the International Organizations (IOs), address them .

Chair with addressing remarks: **Monte MALLIN,** , Director, Strategic Planning, Office of Nonproliferation and International Security, NNSA, US

Speakers:

Governmental:

Duncan Mc COMBIE, Deputy Head, Counter Proliferation Department, Foreign and Commonwealth Office, United Kingdom

Representatives from IOs and related initiatives:

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[*] ***Co-chairs all sessions.***

All contributions should last no more than 10 minutes.

Christopher HOBBS, King's College & IAEA, London, UK

Nicolas KASPRZYK, 1540 Committee expert, United Nations, New York, USA

Krysztof PATUREJ, Director, Office of Special Projects, OPCW, The Hague, The Netherlands

Michael THORNTON, CBRN CoE Project Coordinator, Joint Research Centre, European Commission, Ispra, Italy

11:30-11:45 **Coffee Break**

11:45-13:45 **Session 2.** ***Evolving, Existing and New Threats Stemming from Nuclear/Radiological Sectors; Bio/Nano Sectors; Cyber & Information Technology Sectors, and their implications for SE***

This session will deal with the new Post-Cold War challenges due to the global spread of sensitive technologies and expertise, as well as their impact on Scientists Engagement. This session will also deal with the possible counter-measures needed to prevent State/non-State actors from acquiring CBRN weapon-usable materials, pursue Cyber (Cy) terrorism and from obtaining sensitive information and related threshold technologies for malicious purposes. A particular emphasis will be set: for the Nuclear, Rad Sectors (NRSs), on the development of "improvised nuclear explosive charges", "radiological dispersion devices" and on fostering global radiological security; for the Bio, Chem, Nano Sectors (BCNSs), on the illicit use of synthetic biology, merging bio-chem sectors and genetically engineered organisms, as well as on the manufacturing of nano-engineered hazard materials; and for the Cyber & Information Technology Sectors (CyITSs), on the feasibility of cyber-attacks against critical NBC infrastructures, as well as against ICT systems.

Chair with addressing remarks: **Anne HARRINGTON**

For the NRSs

Key Speaker:

Jonathan KATZ, Professor of Physics, University of Washington, US

Panelists:

Giuseppe GHERARDI & Franca PADOANI, ENEA, Bologna, Italy

Francesco TROIANI, ENEA, Bologna, Italy

Others

For the BCNSs

Key Speakers:

[*For Bio-Chem*]

James Le DUC, Director, Galveston National Laboratory, University of Texas Medical Branch, Galveston, US

[*For Nano*]

Stanley SATZ, Chairman, CSO & Co-Founder, Bionucleonics, Miami, US

Panelists:

Kathleen EGGLESON, Research Scientist, Center for Nano Science and Technology (NDnano), University of Notre Dame, US

Gerald WALTHER, University of Bradford, UK

Others

13:45-15:00 **Lunch Break**

15:00-15:45 **Session 2-Continuation.** ***Evolving, Existing and New Threats Stemming from Nuclear/Radiological Sectors; Bio/Nano Sectors; Cyber & Information Technology Sectors, and their implications for SE***

For the CyITSs

Key Speaker:

Clay WILSON, Director, Program in Cybersecurity Policy, Graduate School of Management and Technology, University of Maryland, US

Panelists:

Sandro BOLOGNA, Italian Association of Critical Infrastructures Experts, Rome, Italy

Stephanie MEULENBELT, Office of Special Projects, OPCW, The Hague, The Netherlands

Paul WALKER, Director, Environmental Security and Sustainability Green Cross International, Washington DC, US

Others

15:45-17:30 **Session 3.** ***Strengthening Global Initiatives and International/Multilateral Mechanisms to Advance the Long-Term SE Mission***

Discussion will focus on long-term efforts aimed to secure intangibles by strengthening existing mechanisms, evolving such mechanisms to ensure a long-term role in meeting new SE challenges, and thinking "out of the box" about how mechanisms can be developed to meet "over the horizon" SE challenges. Discussion will focus, for example, on topics such as the enhancement and fostering of national, multilateral and international CBRN-related Support Centers and Centers of Excellence, the potential role of national academies, implementing commitments from the Nuclear Security Summit, or evolving the Science Centers to ensure their long-term relevance.

Chair with addressing remarks: **Maurizio MARTELLINI**

Speakers:

Ben BASELEY-WALKER, UNIDIR, Programme Lead on Emerging Security Threats Programme, Geneva, Switzerland

Andrew HOOD, Special Assistant/Senior Advisor, Defense Nuclear Nonproliferation, NNSA, US

Jo HUSBANDS, Senior Project Director, U.S. National Academy of Sciences (NAS), Washington DC, US

HE Amb. Boujemâa DELMI, Chair, 2012 Biological Weapons Convention (BWC) Meeting of Experts, United Nations Office at Geneva (UNOG), Switzerland

Victor MUROGOV, Director, International Center Nuclear Education, MEPhI, Moscow, Russia

James REVILL & Giulio MANCINI, Research Fellow & Programme Officer, LNCV, Como, Italy

17:30–17:45 **Coffee Break**

17:45-18:15 **Special Lecture. The Establishment of an "International Center for Safe Nanotechnology"**

Stanley SATZ, Chairman, CSO & Co-Founder, Bionucleonics, Miami, US

20:30 **Social Dinner**

SEPTEMBER 14th

9:15-10:15 **Session 4.** ***The Geographic Focus: a New Role for the Global Players in Euro Asia-Pacific-Latin America Regions. Round Table Discussion***

This thematic session will deal on how to outreach SE programs in key Euro Asia-Pacific-Latin America countries to promote the international security agenda and the objectives of the Global Partnership (GP) against the Spread of Weapons and Materials of Mass Destruction, the Global Initiative to Combat Nuclear Terrorism (GICNT), the Nuclear Security Summit (NSS), as well as of other multilateral instruments that address CBRN security objectives

Chair with addressing remarks: **Ambassador Bonnie JENKINS**

Speakers:

For Russian Federation: Olga VORONTSOVA, Deputy Director, Center for International Relations, Russian Federal Nuclear Center, VNIIEF, Sarov, Russia

For China: Hong LI, Secretary-general, China Arms Control and Disarmament Association, Beijing, China

For Latina America: Amb. Marcos DE AZAMBUJA (Brazil), Professor, Brazilian Centre for International Relations, Rio de Janeiro, Brazil &

Amb. Rogelio PFIRTER (Argentine), Former Director General OPCW, Buenos Aires, Argentina

10:15-10:45 **Coffee Break**

Meeting of Breakout Groups' moderators and rapporteurs

10:45-12:00 **Breakout Groups.** ***Brainstorming about the Future of the CBRN Threat Reduction and Prevention Mechanisms***

This session will divide the participants into the following three Brainstorming Groups:

1) *Analysis of Post-Cold War Threats Beyond 2012 and Mechanisms to Address Them (Moderator: Monte MALLIN- Rapporteur: Kathleen EGGLESON)*
2) *Outreach SE Efforts in Euro Asia-Pacific-Latin America Regions (Moderator: Maurizio MARTELLINI – Rapporteur: Gerald WALTHER)*
3) *Qualitative and Narrative Analysis of the Current International, Multilateral and National Initiatives Aimed to Enhance and Expand a "CBRNCy Non Proliferation Culture" (Moderator: James REVILL – Rapporteur: Giulio MANCINI)*

12:00–12:45 **Reports from breakout groups.** ***Final conclusions and adjournments by the Organizers*** **(Anne HARRINGTON, Monte MALLIN and Maurizio MARTELLINI)**

12:45 **Lunch Break**

IWG **LNCV**

Fourth International Working Group (IWG) Discussion: Global Partnership (GP) – 2012 and Beyond

October 22nd , 2012

Four Points Pleasanton Hotel
5115 Hopyard Road
Pleasanton, CA

AGENDA

8:30 am	**Registration**
9:00-9:15 am	**Welcome and Introduction** Ambassador Bonnie Jenkins, IWG Chair and Coordinator, Threat Reduction Programs, DoS, US
9:15-9:30 am	**Wrap-up of 2012 IWG-GP Meetings** Maurizio Martellini, IWG Executive Secretary and Landau Network Centro Volta (LNCV) Secretary General, Italy
9:30-11:15 am	**SESSION 1. Summary of 2012 IWG-GP Themes** Chair with remarks: Ambassador Bonnie Jenkins, IWG Chair and Coordinator, Threat Reduction Programs, DoS, US • ***Whole-of-Government Approach to Security Policy.*** • ***Measuring Success of Scientists Engagement Programs.*** • ***Perspectives of GP Membership Expansion.***
11:15-11:30 am	*Coffee break*
11:30-1:15 pm	**SESSION 2. Discussion on the Global Partnership, UNSCR 1540 and Chemical Security** Chair with remarks: Ambassador Bonnie Jenkins, IWG and DoS, US Nicolas Kasprzyk, 1540 Committee Expert, United Nations, New York, US

William Keller, Director, Center for International Trade and Security, University of Georgia, Athens, US

Krzysztof Paturej, Director, Office of Special Projects, OPCW, The Hague, The Netherlands

General Discussion

1:15-2:15 pm *Lunch break*

2:15-3:45 pm **SESSION 3. Security Implications of Nano and Cyber Developments**

Chair with remarks: Monte Mallin, Director, ISN Strategic Planning Office, NNSA, DoE, US

Kathleen Eggleson, Research Scientist, ELSI&EHS, University of Notre Dame, NDNano, Center for Nano Science and Technology, Notre Dame, IN, US

Clay Wilson, Director, Program in Cybersecurity Policy, Graduate School of Management and Technology, University of Maryland, Baltimore, USA

General Discussion

3:45-4:45 pm **SESSION 4. Future of the IWG and the GP**

Co-Chairs with remarks**:** Ambassador Bonnie Jenkins, IWG and DoS, US & Maurizio Martellini, IWG and LNCV, Italy

General Discussion

4:45 pm **Summary and Conclusions**

IWG Executive Secretariat Report on

International Working Group (IWG) Discussion: Global Partnership (GP) – 2012 and Beyond

US State Department, Washington DC, 23rd January 2012

Preliminary Remarks

This meeting was held under the auspices of the International Working Group (IWG) to enable the Global Partnership countries to informally discuss, in partnership with a number of Non Government Organisations (NGOs) and representatives of the science community, a range of issues associated with scientist engagement. These included future priorities, how best to engage and involve new partners, associated metrics and more effective methods for engagement which utilised the expertise and interests of all stakeholders within government. The IWG meeting, chaired by Ambassador Bonnie Jenkins, in cooperation with the Executive Secretariat of the IWG, was the first of a series of workshops being held during the US chair of the G8, to involve a wide range of expertise to help inform, and shape the way forward for the GP programme beyond 2012. The workshop was structured around a series of formal presentations from expert panels designed to stimulate discussion on global scientist engagement, the whole government approach to threat reduction, metrics, as well as outreach to new partners.

Key points made during the discussions

- Not just scientists but their support teams and all those who work in an environment where sensitive information and materials used and stored – need a holistic approach to promoting professional responsibility
- Importance of using the national science and engineering academies to advise on programme development and ensure professional responsibility embedded in all levels of a scientist's education and training
- Importance of understanding the needs of partner countries first
- Importance of getting the nuclear renaissance countries involved as partners
- Value of twinning to foster collaboration and coordination
- While metrics were important from a project management point of view for engagement activities care needed to be taken in attempting to impose numerical measures on outputs which were often subjective and difficult to measure
- Involving a wide range of government interests in engagement projects has considerable political and financial benefits

- The Centres of Excellence Networks, not only the EU inspired ones, present opportunities to raise global awareness of scientist engagement work
- The IWG provides a valuable non-political and neutral forum for discussion of GP-related issues

Summary note of the meeting

In opening the workshop Ambassador Jenkins said that she would like the group to look at a range of issues and by the end of the year to have identified key areas to take forward in the GP programme. The intention was to have the Academies and scientists themselves to participate in this assessment process including advising on policy development and the challenges faced in measuring the sustainability of both projects and programmes. NGOs were also seen to have an important role to play and feed into the discussions their perceptions of the future priorities for the GP. There was strong support for involving more people in developing the work programme of the GP beyond 2012 and learning what other are doing. It was recognised more needed to be done to communicate more effectively on the breadth of threat reduction work underway and the series of IWG workshops presented a good vehicle for this. While scientist engagement was seen as an important tool in any strategy to address security and proliferation concerns across all CBRN sectors, the global nature of the challenge meant that a much wider body of partners needed to be involved – both within GP member states and new non-G8 players especially key powers in Asia and South America. The importance of ensuring the continued involvement of the original portfolio of GP countries in the discussions and development of the future programme was also raised.

Previous IWG workshops highlighted the importance of engagement activities that were based on approaches which were built on developing a sound understanding of the needs of partners and fostering good working relationships before implementing programmes. This message was also repeated throughout this latest workshop – most noticeably associated with South America, where good collaboration on a number of threat related issues had been accomplished outside the GP. Closer ties with the GP by economically growing South American countries offered potential to achieve much more - notably on bio safety and bio security.

The discussions stimulated by the scientist engagement panel highlighted the opportunities to engage with scientists through a range of existing instruments not normally associated with the topic, notably with respect to NATO, and the fact that there was an increasing momentum for countries to implement 1540 in a comprehensive manner. Since many of these countries had limited resources, a number of partnership opportunities existed to promote best practice, especially to ensure a comprehensive or holistic approach to threat mitigation.

The importance of education at Undergraduate and at Masters Level across the CBRN sectors was recognised as an essential building block in fostering professional responsibility, well before scientists started to work on sensitive issues. The work of the IAEA to promote nuclear security education was noted and welcomed. The development of the ongoing CTR 2.0 initiatives by the US (BEP) and Canada to foster awareness and dual-use education in many regions of the world, was also recognized as an effective platform to enhance scientists engagement GP programs. Twinning of laboratories, university-to-university collaboration all were seen as important awareness raising initiatives which also had the potential to foster good working relationships and providing transparency to what was taking place within research facilities.

The panel embracing a "whole government approach" provided some valuable insights how it could be used to stimulate a more effective and targeted approach of using scarce available resources (funding and expertise) – and increase the likelihood of sustainable programmes. The approach, when effectively thought through, also offered to maximise the impact of government agencies not normally associated with threat reduction. Such an approach needed effective communication to identify the value of programmes to a wider range of stakeholders than traditionally brought together. The panel discussions on the whole government approach also emphasised the importance of sharing lessons learnt experience and the fact that for a number of countries, non proliferation is not very high on their agenda. In such circumstances initiatives which build capacity addressing public health improvements, counter drug trafficking, or emergency response capability etc, as well as meeting their priority needs, also address proliferation concerns identified by the GP community.

A key discussion point revolved around the challenge of measuring the impact and sustainability of engagement initiatives. A presentation by the National Academy of Sciences on improving metrics study for the US Department of Defense Cooperative Threat Reduction Program provided some valuable guidance and advice for future GP engagement initiatives, most notably in designing and using metrics1. The study highlighted the difficulty in designing metrics for capacity building type activities, but noted the importance of not moving to fund projects which can be measured against ones difficult to do so. In designing metrics for engagement projects key lessons learnt included having a clear baseline against which to measure success, being precise about objectives and be ready for changes to happen with strategies in place to deal with such changes. The importance of having independent evaluation was also noted. While there was recognition engagement type activities needed to have some process which attempted to identify progress was being made, the important point made was that "the key driver for

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[1] the National Academies' report on metrics for the U.S. Department of Defense Cooperative Threat Reduction Program is now available. It can be found on the web as a PDF at http://www.nap.edu/catalog.php?record_id=13289.

this type of work was to ensure our partners in the developing world can do it for themselves".

A new theme for the IWG/GP workshop series, besides the traditional one associated with developments in life science (like synthetic biology), embraced a presentation and discussion on cyber security of critical bio and nuclear infrastructures. This was seen a unique threat about which there was a good deal of misinformation in the media. This was perceived by all as an area requiring international collaboration on a portfolio of measures. In particular, it was noted that the cost implications of software changes at nuclear power plants was a limiting factor for many countries.

The final panel session on GP engagement and outreach highlighted the significant change now taking place with a move away from addressing the challenges of dealing with the legacy of the cold war, to dealing with global vulnerabilities that may not be obvious to some, and within a markedly less favourable financial climate. There was recognition that to make the GP a more effective instrument it needed to reach out to involve new countries, ensure the existing GP community sticks together and also engage with the international institutions such as the IAEA, WHO, OPCW, BTWC – institutions which GP countries themselves supported financially and provided technical expertise to. It was also recognised that there needed to be a better dialogue with the private sector and ensure we learn lessons from across the CBRN sectors.

It was reported that the GP working group established to identify and encourage new GP partners, had already undertaken bilateral talks with around 9 countries. A number of these had thought the GP was just working in Russia and a few other Former Soviet Union countries, and did not know it now had a global focus. A consistent message from these bilateral discussions was that countries were already overwhelmed with the need to service effectively other international agreements. It was recognised that if the GP was to be successful in widening its membership, let alone ensure it retains the active participation of existing partners, it needed to demonstrate it remained a key instrument to tackle global threats.

A final review of engagement activities emphasised the importance of understanding why we were engaging the scientific community and also that we were not seeing them as a threat, but as part of the solution to promote professional responsibility at all levels. A key message repeated several times throughout the workshop was the important and common sense approach of understanding what countries and their communities needed themselves before embarking on projects and programmes. All recognised that more needed to be done to raise awareness of the wide range of engagement projects that could be undertaken by the GP embracing safeguards, border security, radiation detection, ISO standards for cyber security etc , as well as the more obvious education and training activities to promote and enhance professional responsibility. The networks of Centres of

Excellence, currently operating or to be established across the globe, like the EU CBRN CoE, were also seen as having potential to be used to promote, and undertake a number of engagement initiatives once they become effective – and also contribute to their sustainability.

Closing the meeting Ambassador Jenkins reported that the US would be placing information arising from the IWG meetings on the website established for the GP this year.

IWG Executive Secretariat Report on

Second International Working Group (IWG) Discussion: Global Partnership (GP) – 2012 and Beyond

Kennedy School, Harvard University, Boston, 12th March 2012

Preliminary Remarks

"Scientist Engagement" has been identified as one of the four priorities for the Global Partnership (GP) to address as part of its future work programme beyond 2012. This meeting, chaired by Ambassador Bonnie Jenkins of the US State Department, was the second held in 2012 under the auspices of the International Working Group to assist Global Partnership countries in shaping future priorities for scientist engagement. The first meeting took place in Washington in January, in partnership with a number of Non Government Organisations and representatives of the science community. This second meeting involved representatives of international organisations who had a direct interest and policy responsibility for a wide range of CBRN activities, through which they had substantial contact and interaction with scientists, their support teams, and industry.

The workshop was structured around a series of formal presentations from expert panels designed to stimulate discussion on global scientist engagement, the skills and expertise a range of government and international organisations could bring to future programmes, potential metrics that might be used to measure the impact of programmes, as well as outreach to new partners.

Key points made during the discussions

- The "step by step approach" recommended for enhancing collaboration on bio security in South America was seen as an effective way to highlight the benefits of GP membership from the region
- A whole of government approach to addressing bio-security, alongside measures to enhance animal and human health, is more likely to lead to states supporting initiatives which also enhance bio- security
- While a range of mechanisms existed to shape the development of metrics for engagement projects, they could never provide a fully definitive statement of the impact they might have. What was important was they focused on measurement criteria people could relate to and that metrics are constantly re-evaluated and refined, as strategic priorities and programs evolve.

- The IWG was an invaluable forum to discuss informally a range of policy options which GP countries might consider for future scientist engagement efforts – especially with respect to building and strengthening networks, assessing potential impacts of new activities, and ensuring that the right actors are involved in engagement activities.

Summary note of the meeting

In opening the workshop Ambassador Jenkins said that she looked to the IWG forum to debate and advise on a range of issues related to scientist engagement and assist the GP to identify key initiatives to take forward under the GP programme. She emphasized that new approaches were needed, recognizing that the scientists, technicians, and engineers (STE) and other experts could be principal stakeholders in developing best practices, training programs, and other measures that could impact the full spectrum of CBRN issues.

Ambassador Jenkins emphasised that the international organisations present brought substantial experience and networks on CBRN activities which will be invaluable in ensuring the success of future programmes. She explained that the GP sought to work closely with international organisations and that the meeting was an opportunity to share information, establish new relationships and identify areas for collaboration. Participants agreed that scientist engagement was an important tool in any strategy to address security and proliferation concerns across all CBRN sectors, and also emphasized that the global nature of the challenge meant that a much wider body of partners needed to be involved – for example in Latin America, SE Asia, and the Middle East. The importance of ensuring the continued involvement of the original portfolio of GP countries in the discussions was also emphasized.

Previous IWG workshops highlighted the importance of engagement activities based on developing a sound understanding of the needs of partners and fostering good working relationships before implementing programmes. This message was reinforced throughout this workshop, with discussions on Pakistan and India, Latin America, and other regions where collaboration on a number of threat-related issues had taken place outside the GP. It was emphasized, however, that closer ties with the GP offered the potential to achieve more, particularly in areas such as bio safety and bio security.

Regarding Argentina and Brazil, it was evident that a key feature of the successful collaboration on nuclear issues stemmed from the good working relationships between the scientists themselves. This model was now being used to develop collaboration between the two countries on bio safety and bio security. However a key challenge was the importance of identifying credible collaborators and overcoming the perception that bio security was not a priority. An approach that gradually built trust and raised awareness was viewed as the best way forward. .

The Earth summit conference in June was also discussed as a useful forum to identify and bring together key people – as well as try to introduce some language to the summit documents which highlighted the importance of bio security. Involving Chile as a partner in a bio-security strategy for South America was also seen as important and adding a Pacific dimension. In discussion it was recognized that bio security awareness raising offered a potentially productive route for GP outreach to South America, building on the work Argentina and Brazil had started to implement. Their approach also emphasized the value of a gradual approach and using existing infrastructures to promote initiatives.

Such an approach was also recognised as having value to engage with the chemical industry, although this was seen to be a bigger task. All felt the challenge in raising industry awareness was to avoid the impression that engagement activities meant more layers of bureaucracy, but was focused on making good use of existing structures and institutions.

The importance of identifying champions in both government agencies and industry was emphasized in a number of the presentations and subsequent discussions. It was recognised that in some areas there was a good deal of expertise that existed in retired personnel from both industry and the public sector that could be utilized to promote awareness.

Much of the discussion on "getting the message across" with respect to awareness raising on bio security focused on the importance of addressing the real concerns of states, which may relate to improving animal and human health, rather than approaching the issue from a security perspective. The challenge here was seen with respect to how best to coordinate donor responses to address security issues by using human and animal health initiatives as the primary goal. These challenges highlighted the importance of a whole of government approach to threat reduction which could lead to more cost effective and focused programmes.

The meeting included further detailed discussions on metrics, which were viewed as vital to provide confidence to all stakeholders that future GP programmes were having the desired impact. All recognised there were a range of approaches that could be used to shape a portfolio of metrics, and the recently completed U.S. Academy of Sciences report on metrics provided some useful guidance, especially on the limitations of metrics as effective measurements of scientist collaboration and engagement programs. It was suggested that "operative", not ideal, metrics, can hardly fully capture the complexity of engagements programs, due to their short and long term objectives, and provide a measure of sustainability after the expiring of the projects themselves, as well as make a comprehensive evaluation of their “intangible” dimensions of the security engagement programs.

It was also recognised that developing metrics for bio-security posed quite different challenges to that for nuclear projects. Upgrading of laboratories and other facilities were just part of the picture as were enhancing emergency preparedness and measuring improvements in animal and human health. The value of collaborating with the WHO, OIE, and FAO etc. to make use of their data also offered opportunities to widen the effectiveness of measuring the sustainability of bio-security programmes.

The IWG was provided with a progress report on the efforts to expand GP membership and to focus the GP objectives beyond 2012, to encompass global CBRN challenges. There was a strong desire to widen GP membership to include new partners from South America, Africa, Middle East and SE Asia, including China. All countries approached so far were aware of the GP and wanted to understand the added value and benefits of participating given most countries approached were already involved in other CBRN regimes and had finite resources to devote to GP topics. It was reported that some of those countries approached had also asked to attend GP meetings as observers to help them understand the value of participation. In this context, the GP members are considering the value of developing a statement that set out the advantages of GP membership and highlighting the GP’s practical focus, as well as the fact it brought together experts involved in all the CBRN regimes in one place. While it was also acknowledged that while some states may not be able to provide additional funding to the GP, their inclusion and technical expertise would be valuable for sustaining the GP process in a long-term perspective.

In the sum-up, the IWG Executive Secretary pointed out that GP extension, as well as its geographic expansion, suggests that the GP governments should look closely at the GP guidelines and principles as a logical framework to address existing and planned CBRN threat cooperation programs. An “inward outreach” effort was suggested, which could help to reduce the gaps and create links with the other international instruments in place, like the Global Initiative to Combat Nuclear Terrorism, UNSCR 1540, or the Nuclear Security Summit process. This “GP hub” could be an attractive framework for involving emerging global powers on scientists engagement projects.

IWG Executive Secretariat Report on

Third International Working Group (IWG) Discussion Global Partnership (GP) – 2012 and Beyond

US Southern Command, Miami FL, 16th April, 2012

Preliminary Remarks

The third discussion meeting of the International Working Group (IWG) on the Global Partnership – 2012 and beyond, was held on April 16th, 2012, at the US Southern Command in Miami, FL. As for previous IWG discussion meetings, it preceded the official GPWG meeting held in the following days; the discussion followed two previous occasions, in Washington, DC in January and in Boston, MA in March.

The IWG third discussion meeting saw the participation of representatives of Global Partnership member countries, international organizations, industrial associations, scientific institutions, think tanks and Non Governmental Organizations interested in CBRN policy.

The discussion meeting was organized in sessions, each including presentations from speakers and a questions & answers roundtable; after an opening session with welcoming address, the meeting addressed the importance of engaging the private sector and the industry into the Global Partnership process and CBRN risk prevention policy discussion. In the afternoon, a session was devoted to the security of "dual use expertise" and the engagement of the scientific community; the last session discussed the building of the 2012 Global Partnership process and the outcomes of the 2012 Nuclear Security Summit in Seoul, held few weeks earlier.

Summary note of the meeting

Welcome / Setting the Context

In opening the discussion meeting, Ambassador Bonnie Jenkins (Chair of the IWG and Coordinator for Threat Reduction Programs at the US Department of State) welcomed participants to the meeting and underline how it was an occasion to bring together those participating to the Global Partnership in official capacity, International Organizations, industry representatives and NGOs. Ambassador Jenkins also outlined the general objective of the IWG discussion meetings for 2012, aimed at fostering a dialogue and producing conclusions and recommendations to provide to the GPWG on how the Global Partnership could move forward. Introducing the program of the day, she underlined how the "whole of government" approach could be usefully applied to the GP process, but also as it could expand to a less traditional "whole of society" approach, including in some way other relevant stakeholders in the subjects of interest, such as the industry, civil society, think tanks. She also drew attention on the importance of assessing practical outputs and in particular to ways of measuring success (or lack of) in innovative CBRN risk mitigation and engagement activities; and on discussing the outcomes of the very recent Nuclear Security Summit.

Maurizio Martellini, IWG Executive Secretary, explained the origin of the IWG discussion meetings exercise as a "track 1.5" initiative, where a range of individuals and organizations were invited and which achieved some result in linking the policy and the scientific communities. He explained how, in his view, the approach to follow for engagement on CBRN issues is in professional responsibility, but also how challenges may be in new forms in the traditional "CBRN" fields – for example taking into account the nexus of cyber and CBRN threats. Finally, he mentioned how the Global Partnership has the potential to become a "hub" of non-proliferation initiatives dealing with the prevention of the misuse of material, technology, and knowledge.

A Whole-of-Government Approach for GP Process: The importance of private industry engagement

In the session on "Whole-of-Government Approach: The importance of private industry engagement", introductory remarks outlined how, like in many other fields, globalization changed radically also the non-proliferation arena. Nonproliferation has really moved forward from "collection of programs" in defined regions and on defined issues, to become a much broader spectrum of initiatives, activities and stakeholders even within the same governments (including for example a number of ministries and agencies: Defence, Foreign Affairs, Agriculture, Health). Furthermore, the number of actors – at both the governmental and nongovernmental level - concerned grew considerably, and it seems that non-proliferation is not at top of most of them – not unreasonably in many cases. Among those, there is also a massive number of concerned actors from the private sector (including but not limiting to sellers, producers, end users, etc) which deal to "dual use". The remainder of the session was devoted to discuss if and how it is possible to engage the private sector.

The first speaker had a long experience of working on the engagement of scientists, including former weapon scientists, on the development and commercialization of innovative technologies for civilian applications. He underlined how the private industry could play a role in non-proliferation programs, and how the different perspectives of private actors could be valuable for engagement programs (including innovation and planning capabilities, investments, international trade relations etc). Examples were also brought of international private-public programs of commercialization and proliferation prevention, which also planned equitable contribution from origin and host countries, configuring as industry partnership rather than assistance and generating revenues for both sides.

The second speaker presented himself with a valuable varied profile and experience which spanned the scientific, the industrial and the security spaces. Involved in drug development and medical isotopes through nano-structures in the private sector, but formerly employed in the nuclear security sector, the speaker brought the experience of working with partner countries in key regions, especially Russia, and engaging CBRN scientific institutions for the development, production and commercialization of medical radiological materials and pharmaceutics.

The third speaker was a maritime transport security professional and a representative of an industrial association on maritime security. The speaker presented on the effective integration of Trade & Transportation Industry Sectors into Global Nonproliferation Efforts, outlining potential programs to engage the various segments of the trade and communication chain, including a broad range of actors and steps, on security imperatives and requirements. He recommended, among other points, to extend awareness of security requirements to all elements of the global supply chain (with a practical point of targeting the sector's journals and publications); harmonize compliance requirements; engage the industry in both policy development and in showing the business case for compliance with regulations (and for having a global security trade environment). The presentation has shown the still existing gap between these private sector initiatives and the UNSCR 1540 that has, among others, similar objectives.

Securing Dual Use Expertise: Toward Practical Outputs in the areas of CBRN

The session on "securing dual use expertise" started with introductory remarks presenting the views of staff at the U.S. National Academies on scientist engagement and a recent study on metrics for threat reduction programs, including a bioengagement program. The speaker underscored the importance of keeping in mind that "scientists are part of the solution, and not part of the problem" when addressing CBRN risks, and that engagement is important for prevention in several ways. Outreach, connections and relationships are the essence of engagement and are most effective when conducted directly by scientists. Distinguished scientists can be "champions" and help to build scientists' awareness, but sustained relationships through joint work help to promote a culture of transparency and responsibility. Finally, awareness runs in both directions and increased active involvement of scientists in the policy process is also essential as technology develops faster and sometimes gets ahead of policy – as it seems to happen with biosecurity or cybersecurity.

The following speaker, a current director of a high-containment biological research national laboratory who has had a long scientific career in governmental biodefence and disease control and prevention at the national and international levels, addressed the issue of “dual-use expertise.” Using the practical example of H5N1 experiments, he presented background on the H5N1 (or avian) influenza and the experiments, conducted in parallel in the U.S. and in Europe. These experiments resulted in modified versions of the virus thought to be capable of person-to-person transmission, which the natural virus is not. The speaker described the decisions of the U.S. National Security Advisory Board for Biosecurity first against and then for publication of the techniques and results. He explained how this episode challenged the tasks and roles of, for example, scientific journals’ editors and publishers – and highlighted also potential issues for regulations of an area where industry is mainly self-regulated and not necessarily globally standardized. The speaker also underlined the need to look at the potential of “bioerrors”, and in particular to protection of workers in the laboratories and preventing accidental releases, as well as laboratory acquired infections. He also mentioned how engagement on CBRN risk mitigation efforts should be promoted at the scientists-to-scientists level, as collaboration naturally increases transparency.

The second speaker presented a project aimed at engaging and raising the awareness of life scientists and technologists, particularly targeting young scientists and students in a network of universities participating to the project in Europe. The project, labelled “European Biosecurity Awareness Raising Network”, is based on the results of a survey and initiative started in 2008 which aimed to engaging European universities into the policy discussion on biosecurity and the promotion of education. The project implements recommendations of the EU CBRN Action Plan and includes a phase of assessment of the current educational opportunities (available courses and references accessible to students on biosecurity, but also on biosafety, bioethics, and issues related to “dual use”), levels of awareness and opinions of scientists is a sample of leading European universities. The project goes on with the set up of a dedicated website where students can find information and news on biosecurity and regulations in Europe, and the organization of a number of seminars.

The third speaker of the session presented the challenge of chemical weapons, a category which seems sometimes overlooked but that was, among CBRN weapons, extensively considered in the XX century. The Chemical Weapons Convention is the most comprehensive treaty among the non-proliferation ones, with 188 states parties. The presentation described the challenge of the destruction of chemical weapons stockpiles, as at least the two main arsenals in the world are going to miss the deadline of April 2012 for the complete destruction. Those deadlines are going to be renegotiated, while other challenges are on the table with regard to both declared arsenals to destroy and non-declared alleged arsenals. National implementation of the Convention should also be promoted, in regard to the establishment of national authorities, criminalization of CW use, and annual reporting. It was also underlined how the Convention and the linked Organization for the Prohibition of Chemical Weapons should, as the destruction of stockpiles is going to complete, shift from their disarmament objectives to the non-proliferation ones, including the involvement of industrial inspections.

Roundtable on GP Building on the GPWGs and on Seoul 2012 Nuclear Security Summit Outcomes

In the last session, the first speaker addressed the development of a "nuclear security culture", and how it was addressed by the Communiqué of the Nuclear Security Summit. In particular, the Communiqué from Seoul acknowledged the need for capacity building for nuclear security; advocated nuclear security through technology development and human resource development; and promotes nuclear security cooperation and assistance at bilateral, regional and multilateral levels. The presentation included some exemplar initiatives of member states on the nuclear security (such as the update of regulations in Germany and IAEA-collaborated workshops on nuclear security culture in Finland and Russia), the Convention for the Physical Protection of Nuclear Material (CPPNM) and valuable national initiatives on engagement on nuclear security culture.

The second speaker, from the international law enforcement community, also referred to the 2012 Nuclear Security Summit Communiqué underlining the attention given in the text to the prosecution of illicit nuclear trafficking and offences. The presentation also outlined examples of national initiatives to combat smuggling, and international cooperation and assistance on increasing law enforcement capabilities. The need to increase awareness also within the law enforcement community was a key point.

The third speaker presented an initiative of the European Union, the CBRN Risk Mitigation Centers of Excellence, which is aimed to helping countries to work together in the regional contexts. In the framework of the Regional Secretariats (each pertaining to one of the eight regional Centers of Excellence in the world), countries have actually identified national needs and priorities on CBRN risk mitigation and selected activities to implement in partnership with the European Union. The initiative has also a strong outreach component and of coordination among the various Centers and with other international institutions.

Finally, a presentation addressed the activities of the UNSCR1540 Committee, which mandate was renovated in April 2011 for a period of further 10 years. Much work is expected for the implementation at the national level of all member states of UNSCR1540, which can be interpreted as a "long term task asking for immediate action". UNSCR1540, as mentioned, is unique in the area of WMD prevention and nonproliferation, because it sets obligations for member countries. Even before the Deauville summit there were indications of possible areas of cooperation between the UNSCR1540 and the Global Partnership, however that summit represented a turning point. Four priorities were identified for the GP including facilitation of 1540, the submission of consolidaded lists of assistance reports, capacity building to facilitate Resolution's implementation.

Roundtable Discussion and Summary

In the roundtable discussion, it was raised how one of the risks to avoid is the proliferation of instruments and tasks, and how coordination is one of the objectives and the challenges in itself. The engagement of civil society actors and NGOs should be pursued also for the implementation and monitoring of new initiatives of engagement and outreach, especially when governmental organizations at the national or international levels are unable to manage them. At the same time, it was underlined how the dedicated international organizations like the IAEA are the best placed to provide networking and coordination among and between governmental and nongovernmental actors.

Further regarding the progressive engagement of stakeholders in the CBRN policy discussion, the meeting raised how recent examples of discussion, such as the same 2012 Nuclear Security Summit, have been particularly open to all those (including civil society, scientific communities, private sector) having "something to say and something to offer". The aim is to move forward a cooperation of both governments and non-governmental stakeholders.

IWG Executive Secretariat Report on

NNSA&IWG-LNCV Workshop and Roundtable on "Science Collaboration and Security: Emerging CBRNCy Challenges and Threat Reduction Programs Beyond 2012"

Villa Erba, Cernobbio-Como, Italy, September 13-14th, 2012

Executive Summary

The NNSA&IWG-LNCV Workshop and Roundtable on "Science Collaboration and Security: Emerging CBRNCy Challenges and Threat Reduction Programs Beyond 2012" was focused on moving beyond the old paradigm of redirection and look to dealing with a range of evolving threats across the globe through scientific collaboration and engagement. The meeting provided participants with a greater understanding of the evolving challenges posed by chemical, biological, radiological and nuclear threats, but also with an insight into the issues raised by emerging and converging technologies, such as cyber-security, nanotechnology and neurobiology. In the first session, the current state of the art was outlined in relation to a number of key mechanisms, including the UNSC resolution 1540, the EU CBRN Centres of Excellence, OPCW and the IAEA, all of which are having to adapt in order to respond to a changing global context in which sensitive technologies are increasingly diffused around the globe.

The following sessions addressed a number of technology specific developments, and allowed space for discussion of the perceived risks posed by each of these different sectors. The sessions illustrated the depth and breadth of challenges posed by sensitive, dual use technologies and the spectrum of risks posed by CBRNCy, which range from the natural to the accidental to the deliberate. It further served to underline how there is no one single area of concern, but a number of different challenges ranging from natural outbreaks of diseases, to chemical accidents, to radiological terrorism, to state based cyber attacks using zero day exploits. The sessions also usefully served to highlight the diversity of variables which could be employed in deliberate attacks which make efforts to prevent and respond a difficult task, and the complexity of 21st century security challenges.

In the afternoon attention turned to mechanisms for education and engagement that were currently being employed around the globe to respond to some of the challenges posed by CBRNCy. The session highlighted the importance of scientists being part of the solution, both in terms of preventing the hostile exploitation of CBRNCy, but also in responding to the consequences of a disaster. This did however require the scientific and security communities to work together in a cooperative manner, which in turn required the development of both a shared vocabulary and a shared understanding of the concerns of the security community. The role of codes of conduct, education and awareness was highlighted as particularly useful tools through which a bridge could be built between different communities and norms could be articulated, although both codes and education need to be carefully tailored to avoid triggering sensitivities in the communities they would seek to affect. The session also recognised the value of cross fertilisation between the different silos of CBRNCy and the value the exchange of lessons learned could provide.

In the penultimate session a geographical perspective was outlined. The session highlighted the importance of scientists engagement in dealing with challenges, regardless of whether they were natural, accidental or deliberate, and outlined some of the initiatives undertaken in countries around the globe in relation to engagement. The session also usefully served to identify the potentialities, but also the limitations, of regional scientific engagement. This session reaffirmed the importance of engagement activities being global, with no region left behind and underscored the value of the Global Partnerships expansion beyond the FSU.

The breakout sessions reaffirmed a number of salient points made during the meetings and allowed a broad range of perspectives to be brought to the fore. Participants recognised that there is a long and fruitful history of technical which has built deep water anchor in relations between different communities in times of political turbulence, as it provided a channel of communication between different actors. It was largely recognised that there was a need to build a common foundation and find a shared language and understanding of emerging and re-emerging threats. The breakout groups also recognised that education and engagement flow from and between specific populations, so there would need to be tailored approaches, yet at the same time there is great merit to looking outside of sector-specific silos at what works (and what doesn't), and identifying mechanisms to bring scientists in as part of the solution not part of the problem. In order to maximise future activities, participants underlined the importance of shifting from information sharing to greater coordination in order to ensure initiatives are complementary and avoid duplication of activities. The breakout groups further identified specific proposals for the IWG which included building a common community foundation, through, for example bite sized introductory working papers, discussion of key topics or debating the plausibility of threats; as well as working on outreach engagement to a broad audience including but not limited to scientists.

IWG: Looking forward

The meeting recognised that the IWG operates at the intersection between scientists engagement, existing threats and emerging challenges. It was agreed that there remains an important role to play for the IWG in looking at the human dimension in relation to existing, emerging and converging CBRNCy threats across the globe, and, through its meetings, provide a platform to facilitate discussion, information sharing and coordination amongst key stakeholders on these important issues. The IWG Secretariat has stated that it hopes further NNSA&IWG – LNCV meetings will continue beyond 2012 in this regard.

Introductory session

The introductory session welcomed participants and outlined some of the thinking that underpinned the meeting. Thus, the introductory remarks recognised the broad nature of the challenges posed by CBRNCy, including the cyber (Cy) threats, and the evolution of thinking from redirection to engagement, a shift which requires working with a range of different actors. It was pointed out that the IWG has long recognised that dealing with these challenges - and by implication seeking to secure sensitive knowledge through addressing the human dimension - cannot be done through a ‘one size fits all’ approach although this should not preclude cross fertilization and peering out of silos.

Session I

Key points

- The GP should aspire to help partners around the globe develop technology in a manner which is safe and secure;
- The advance, convergence and diffusion of different technologies requires a multi-stakeholder approach;
- We are faced with a spectrum of threats from deliberate, to accidental, to natural;
- It is important for governments to remain engaged with scientists and serve as a link between communities.

The first session began by encouraging participants to move beyond the old paradigm of redirection and look to dealing with a range of evolving threats. Following the Chairs’ opening remarks, a number of presentations ensued, which served to set the scene and outline a vision for the future of the GP. In the case of the UK, it was pointed out that there are a number of activities currently underway, including the development of a code of conduct for nuclear security. In the future it was hoped that the UK Presidency could continue to broaden the audience of the Global Partnership, both geographically and in terms of the range of stakeholders engaged. The evolution of the GP also required an evolution in the focus: from primarily redirection and submarine dismantlement, to dealing with other threats in different regions. In the future, the objective should be to aspire to help partners develop technology in a manner which is safe and secure through, for example, building security cultures and working with the scientific community on issues of codes. The First speaker noted that such issues are often sensitive and raised a number of questions, however he underlined that it is important for governments to remain engaged in these issues and serve as a link between the local and the international.

The Second speaker provided an overview of the EU CBRN Centres of Excellence initiative. The speaker began by underlining the spectrum of threats from deliberate, to accidental, to natural. Their focus, however, was on prevention and mitigation of the consequences of any event. The Centres of Excellence (CoE) are intended to build capacity through a network of collaborative partners, and they are currently working with 49 countries in 8 regions. Partner countries have specific requirements and join voluntarily. The speaker indicated that these Centres have a dedicated CBRN team, but also have points of contacts in all 27 EU Member States, as well as links with the IAEA, OPCW, the BTWC ISU, Interpol and the WHO.

The Third speaker focused on UNSC resolution 1540 which binds all UN member states. At one stage, the 1540 Committee was formed of 15 delegates and 9 experts; however, in its current form the number of experts is reduced to 2 persons and focuses on visit to states to discuss all aspects of implementation of 1540. This requires working closely with IGOs – such as the BTWC ISU - and regional/sub regional organisations, to ensure mutually reinforcing interaction between different stakeholders and tailored activities that suit the local context. The speaker went on to suggest that the Global Partnership had long been a supporter of the 1540 and perhaps there could be greater complimentarity between objectives of the 1540 Committee and the GP and other mechanisms, such as the EU CoEs, in the future.

The Fourth speaker emphasised the importance of the advancement and convergence of chemistry and biotechnology, and the implications of developments such as chemical production using new techniques, such as micro reactors. The response has been to make the OPCW adopt a multi-stakeholder approach, which draws on public and private bodies, including the involvement of academia, particularly scientists who provide guidance and in turn help explain issues, such as convergence, to member states. In looking into the future, we need to build a chemical security culture and work with scientists more closely, who were looking at what works elsewhere to inform this process.

The Fifth speaker highlighted how the 2010 Washington and 2012 Seoul Nuclear Security Summits communiqués emphasized the importance of capacity building and the need for human resources development as a critical factor in enabling states to be able to implement nuclear security, something which has emerged in the IAEA nuclear security plan 2010-2013. The speaker proceeded to outline some of the activities that had been undertaken in relation to nuclear security education, including the development of an MSc program on nuclear security, as well as professional development courses and peer reviewed textbooks. In the question and answer session that followed, the efficacy and costs of codes of conduct was discussed, and it was suggested codes should be linked to awareness so as to help make informed decision. Other participants queried the geographical scope of the EU CBRN CoEs and it was suggested that all regions would be visited, but the Centres were required to consolidate before expanding further although this remained an objective.

Session II

The second session focused on existing and emerging threats from different sectors and their implications for scientists engagement (SE). The chair began by pointing out that dual use technologies are increasingly diffused around the globe, and it is currently a challenge for many in the security community to understand yet how to develop and sustain a global security culture.

Subsession on Nuclear and Rad Sectors (NRSs): "The development of "improvised nuclear explosive charges", "radiological dispersion devices" and fostering global radiological security."

Key points

- There is a spectrum of different threats posed by emerging and converging technologies;
- There is sometimes disagreement on the risks such technologies pose, and determining the most significant threats is difficult as perpetrators are unpredictable and may be opportunistic;
- The challenge is compounded by continuous increase in the number of dual use facilities and by an expansion of locations with dual use materials;
- Whatever else is required, it will be important for scientists to be brought on board and the gap between science and security to be bridged.

The First speaker of this subsession encouraged participants to focus on the credible threat in a universe of conceivable threats. It was suggested that to be credible it needed to be able to cause sufficient damage to warrant attention and investments in responses. In this regard, it was suggested that a nuclear attack could be a credible threat whereas radiological weapons were less clear, because it was less about fatalities, more about economic and social disruption. It was suggested that, if a threat has not appeared in any form, it is probably not something that you need to spend major resources on. The example of malware was used to illustrate this point, and the speaker suggested that there are so many targets and such an array of defence in the absence of a universal malware weapon, that it was unlikely that the effects would be widespread. Moreover, any feasibility assessment must take into consideration the actor, and in this regard states are capable of much more but even then there are limits. Nonetheless the speaker suggested it was important for scientists to be brought on board to evaluate threats – possibly through some form of scientist policy maker exchange process – and a bridge between the two cultures was required.

The Second speaker began by indicating that the current situation is relatively good in terms of nuclear security, however this could change quickly and in the future there was a need to consider how spent fuels were disposed of in a safe and secure manner. It was pointed out that terrorists do not need the best weapon, but could employ something which exploded and caused mass contamination or simply contaminated a water supply and by implication caused panic.

The Third speaker presented a spectrum of risks posed by nuclear materials suggesting that, whilst the use of a nuclear weapons by terrorist was unlikely, there was potential for the hostile exploitation of low or medium level materials, which were comparatively easy to acquire due to the poor regulator environment in many countries. Examples include the use of Naturally Occurring Radiological Materials (NORMs) which could be dangerous in closed spaces. The use of such weapons would be exacerbated by the current wave of disinformation surrounding radiological weapons, which could be exploited for propaganda purposes. The speaker then raised the issue of sabotage suggesting that this required a strong security culture in facilities with sensitive materials. It was security culture which underpins scientists engagement and there was a need to build security culture in countries where the concept was absent. The speaker proceeded to suggest that the EU CBRN CoEs were a useful vehicle to introduce education and training, through a network of networks which linked the EU CoEs with IAEA Nuclear Security Support Centres. The speaker placed great emphasis on the role of coordination and exploiting synergies between different actors and working together on common issue such as developing an efficient response capability. In turn efficient response capacity was premised on communication, something highlighted by the recent experience with Fukushima.

This subsession concluded with a summary from the Chair, who suggested there was a culture clash between government and academia, and there was a clear need to find ways to improve engagement. One approach could be to involve scientists in classified research, although it was recognised that not all countries and scientific organisations could or would be willing to do this. Controlling materials was a second issue that needed to be addressed, particularly given the increasing levels of materials that will be produced through enrichment and reprocessing. Related to this point dismantlement is also an issue in light of a number of decommissioning projects. Countermeasures also needed more attention and the chair highlighted this point through the case of the Paulson Island incursion by NGOs, including an 82 year old nun; whilst they were prepared for six ninjas, an 82 year old nun was not expected and this is something that needs to be addressed.

In the discussion it was suggested that we need to ‘think the unthinkable’ in light of the broad range of variables that could be employed in an attack. Other participants questioned the dismissal of radiological weapons indicating that such weapons had been developed by Chechens; however, this point was debated with other participants suggesting that we make ourselves more vulnerable by overhyping dangers, adding that we should not cripple ourselves by looking at exaggerated consequences as this enhances levels of fear.

Subsession on Bio, Chem, and Nano Sectors (BCNSs): "The illicit use of synthetic biology, merging biochem sectors and genetically engineered organisms, as well as the manufacturing of nano-engineered hazard materials."

Key points

- There has been a significant expansion of biological laboratories which increases the risks of misuse, accidents and leaks;
- Science is done through collaboration: accordingly, it could be useful to look at how engagement could be done collaboratively through professional societies and scientists in a manner that was more sustainable;
- Nanotechnology is converging with informatics and biotechnology, and providing new capabilities such as controlled release *in viva* in a selected location in the body;
- The neuroscience community is largely being unaware of dual use issues and raising security risks can lead to being ostracised;
- There are not likely to be solutions to the dual use problem, rather it should be viewed as a process of engagement and discourse.

In this subsession the First panellist began with an overview of the front line of the bio-world. It was suggested there had been a significant expansion in the number of laboratories around the world, yet our tools for engagement have not kept pace despite the access to pathogens and knowledge becoming more diffuse, something which could not and should not necessarily be controlled. In the bio sector the concern in the lab were both bioterror and bioerror, and the speaker suggested there was a greater risk of accidental infection leading to transmission, so biosafety was important and should not be overlooked. This required having people who actually understand the concepts of both biosafety and biosecurity, as well as making sure buildings are robust enough to withstand natural disasters. The speaker indicated that science is done through collaboration and it could be beneficial to engage with professional societies and larger microbiology associations which could allow the standardisation of communication processes. In this regard, it could be useful to look at the link between professional societies and scientists as this could build a more sustainable relationship.

The Second speaker focused on nanotechnology drawing on his experience with radioactive nanomaterial. It was pointed out that prophylactic defences, such as masks, are not able to deal with nanotechnology and this raises security and safety issues. The speaker proceeded to raise a number of scenarios highlighting the ease by which sealed source of caesium could be acquired and 'weaponised' with commercially available nanomaterials. The speaker suggested that neither the CWC nor the BWC would cover nanoweapons and there are no real governance mechanisms, despite the dangers posed and the difficulties for first responders and the pervasive nature of the technology. For this reason, he proposed the establishment of an "International Center for safe nanotechnologies Global Partnership".

The Third speaker also looked at the issue of nanotechnology, suggesting that nano level materials have unique properties and behave in different and unpredictable ways. The speaker then focused on bionanotechnology, highlighting the implications of the convergence of nanotechnology with informatics and biotechnology. She suggested that nanoparticles change within a living organism and immediately become coated with proteins, which was significant because it means that the environment influences the nature of the nanoparticle. In practice this means that nanotechnology is more able to cross the blood brain barrier as the protein corono coats the nanoparticle which is subsequently recognised by receptors which transmit through the barrier. The utility of this technology in weapons is compounded by the fact that nanomaterials are not necessarily inert and can be made to undergo controlled release in a location, which too can be controlled. Essentially this means a selected agent can be subject to controlled release in viva in a selected location in the body.

The Fourth speaker addressed the topic of neurobiology and began by drawing attention to the way in which brain interfaces technology can be used to control drones effectively allowing telepresence. Such developments and the ability to interfere in neurocircutry and control an individual generate dual use problems, even if such a challenge is not necessarily WMD per se. In this regard the speaker suggested we should not lose sight of the bigger picture. Difficulties with dual use were compounded by the limited awareness of neurology students. Currently, the speaker's research indicates that only 50% of neurology students receive any form of ethical training, with the BWC appearing as nonexistent in undergraduate education, thus resulting in the neuroscience community largely being unaware of dual use and those that do try and raise such issues are not taken seriously. The danger is that those neuroscientists who raise the topic become servants of the security community, yet ostracised within their own community of research. This makes engagement difficult and we should be wary of the idea of there being a solution or indeed solutions to the dual use problem, rather it should be viewed as a process of engagement and discourse. As with many ethical issues, the speaker suggested we probably won't know the answer until we get past it, but awareness raising will be important along the way.

The question and answer session raised a number of issues. The issue of the weaponisation of nanotechnology and its suitability in aerosol form was raised. One speaker responded by suggesting that nano and aerosolisation are quite compatible, however nanoparticles are difficult to control in the air. There was also a discussion on the issue of the risks posed by radio-nanotechnology and the quantities over which a threat became serious and widespread. Such a discussion, the chairperson noted, underlined the importance of bringing scientists on board and interacting with the security community.

Subsession on Cyber & Information Technology Sectors (CyITSs): "The feasibility of cyber-attacks against critical NBC infrastructures, as well as against ICT systems." and Special Lecture by Staley Satz on Nanotechnology

Key points

- Malware is becoming both much more potent – to the extent it can have kinetic affect - and commercially available;
- Tools to deal with cyber threats are limited. Attribution, deterrence and arms control methods are difficult to apply;
- Nanotechnology has significant dual use potential in its own right or as a means to enhance traditional weapons;
- Nanotechnology is readily available and can be acquired through mail order;
- There is little consideration of the risks or means to regulate nanotechnology.

This subsession began with a presentation on cyber security which focused on zero day exploits (ZDEs), which is described as malicious code that takes advantage of vulnerabilities in computer systems before they are detected. It was suggested that there is no antivirus to deal with zero day exploits, and they are able to linger for months undetected which makes them valuable as cyber weapons. One project in 2007 titled Project Aurora was designed to test the effects of a cyber attack on power systems and it became clear that a virus could be used to have a physical effect on the power grid, in this case affecting the speed of a electric power generator with dramatic results. Flame and Stuxnet are two examples of zero day exploits which may or may not have been deployed by the US and Israel. Flame managed to remain undetected for 5 years and managed to detect keyboard activities, it could remotely change computer settings and managed to map the computer network and transfer the data back. Stuxnet was more covered in the news and this virus destroyed 1000 centrifuges in Iran, affecting also more than 100.000 computers worldwide since it "escaped" through the web. Notably a review of the countries where these cyber weapons have been deployed gives an indicating of who is likely to be behind the attacks.

The speaker proceeded to point out how international tension has increased the value of ZDEs and other malware. China and Russia are suspected of IPR thefts, however other actors can now employ highly skilled experts who create and sell malwares on the market. The main actors remain states but it is also possible for organised crime syndicates to employ experts. In some cases malware is even sold with licenses and payments, which can go as high as $250,000, they are held until the virus is detected and the antivirus solution is developed. When governments buy these tools they drive up the cost and the higher the price, the more attractive some of the malware can appear, all of which makes the internet less and less secure. The speaker concluded by suggesting that the tools to deal with cyber security are limited, attribution and deterrence are unlikely and past attempts to negotiate an arms control treaty failed with the US; instead, it would be better to favour a law enforcement approach.

The next speaker provided further details on nanotechnology, and began by suggesting that nanotechnology has the potential to change America in a manner greater than the cyber revolution. Moreover, it is a dual use technology and just like electricity and computers there are some risks, something compounded by the fact that it is possible to buy a nanobiokit for the delivery of drugs. The absence of strategic research on the risks of nanotechnology was dangerous particularly as machines are evolving faster that human ability to keep up. Anyone can order this stuff and there is no regulation or control, unlike trying to purchase explosives: no one will knock on your door. The materials can then be used to enhance a nuclear explosive charge or combined with synthetic biology techniques to create entirely new weapons, which could enable superefficient terrorism or create a new arms race, but a race of equals, as even the smallest country has the capacity to employ nanoweapons in a simple rocket propelled delivery system. What is more, there is nothing in place to prevent these weapons, neither the Chemical Weapons Convention nor the Biological Weapons Convention cover this technology in a comprehensive way and the international community has been slow to address the risks.

The question and answer session touched upon a number of issues: firstly, there was debate on whether the Chemical Weapons Convention covers nano, and it was suggested that the hostile use of any chemical, which through its action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals would be covered, thus nano-toxic weapons would be covered under the General Purpose Criterion. However the speakers pointed to some ambiguities in the GPC. There was also a technical disagreement on what constitutes a risk in terms of gamma radiation, a discussion which usefully illustrated the chairs the importance of having scientists engaging with the security community to debate risks.

Session III

Key points

- Stakeholders need to develop both a shared language and understanding of threats;
- Provision of scientific advice is particularly important in a time where science is changing rapidly;
- Education and awareness raising is an important foundation for many measures to deal with dual use;
- There is no end point to engagement activities which should be about building a long term relationship;
- There is a need to look across the regimes at what is being done in different sectors of CBRNCy;
- Champions are important as they allow institutional leadership and a create a respected messenger.

In the final session of the first workshop day, the First speaker began by illustrating the importance of people from different communities speaking the same language, something which the generation of codes of conduct can perhaps facilitate as they can contribute to the development of a framework. The speaker proceeded to focus on cyber weapons and questioned whether we have an adequate understanding of the concept of cyber with many people talking at cross purposes. It may be useful to look at where there are areas of convergence and cross over with other areas and silos, but only where they fit; it is impossible to apply international humanitarian law to satellites. The speaker concluded by suggesting that in looking at new threats it is also important to look at the drivers.

The Second speaker focused on nuclear power and pointed to the continued utility of nuclear power around the world. In this regard it was less about a renaissance and more about continuity, although the speaker suggested that dependence on imported energy meant there is potential for further expansion of nuclear power, as well as serving to support desalinisation activities. The Third speaker focused on the BWC experience, and reminded participants that States Parties to the Convention had already covered the themes of codes and education in past intersessional meetings. Indeed, the BWC is well supported by civil society through a poster session and a number of other avenues. The speaker indicated that the current set up includes three standing agenda items, covering science and technology, cooperation and compliance. At the last meeting they had to address the bird flu issue; this incident highlighted the importance of closer engagement between the scientific communities.

The Fourth speaker focused on education and awareness raising which was argued to be an important foundation for many measures to deal with dual use. The speaker suggested it was important to create a network of faculties and have people who can support each other. Champions were also important as they allow institutional leadership, which can enable actors to start engaging the next generation leadership as there is no end point for these activities, but rather it is a continual process. The speaker proceeded to suggest there was a need to look across the regimes, it was apparent that the CTBTO has an excellent system as well as the OPCW. The speaker concluded by underlining the importance of the provision of scientific advice in a time where science is changing rapidly. It was acknowledged that both the CWC and the BWC have review conferences, which address S&T, but it was suggested there is still scope for provision of better materials and knowledge.

The Final speaker suggested that in the case of chemical and biological sectors the number of stakeholders was increasing to the extent that the issue can no longer be dealt with by states alone, as dual use C&B is broadly diffused. Bringing stakeholders on board does however require overcoming certain obstacles, the most significant being the impression –

at least in the bio context - that biosecurity is intrusive, counterproductive, restrictive, or insulting. This has resulted in interest in dual use education and there have been a number of calls for action in this area, however these remain limited to a patchwork of a small number of education projects. A second approach had been through codes and experience, suggested there was "no one size fits all" code which could be employed internationally; rather codes will need to be tailored to suit the specific context. Secondly, it was recognised that there are different understandings and categories of codes and thirdly, the process of promulgation and adoption of codes was recognised as important not least because for codes to be meaningful they need to be taken up and "owned" by the community they seek to influence. There are a number of other intervention points which could be considered. The speaker concluded by outlining some lessons learned suggesting that there needs to be a clear rationale for engagement and awareness of differing priorities of those to be engaged; framing stakeholders in as part of the solution is important; engagement through champions one useful step forward; but also top down support and grass roots 'buy in'. Working through a number of intervention points can make pervasive. Proportional evaluation was identified as useful to gauge & inform progress and satisfy funders. Finally, it was suggested that this was about building a long term relationship between communities (rather than a one night stand).

Session IV

Key points

- Scientists play a crucial role in dealing with both deliberate and natural events and should be engaged early on;
- Some countries already feel overloaded with safety & security measures and frustrated or insulted at being asked to do more;
- The absence of significant incidents should not lead to countries in certain regions being overlooked.

The second day began with a panel on geographical expansion and the chair opened by reiterating the importance of continuing to expand the Global Partnership and broaden the geographical scope of engagement activities.

The First speaker introduced the Russian Federal Nuclear Center (RFNC), the primary mission of which is building safety and security, and which has been engaged in a number of international activities, including scientists engagement which has been historically done through ISTC, STCU and other organisations. The flow of information through such mechanisms of scientific collaboration was important, however there were limits to the free flow of information. The speaker proceeded to illustrate how they had cooperated with Japanese in the wake of Fukushima building on Russia-European research pointing, to how the absence of ISTC and the legal structures it provided made cooperation much more difficult.

The Second speaker provided an overview of the Chinese context. The speaker began by outlining how the 2003 SARS epidemic and chemical accidents had illustrated the potential danger posed by CBRN and the differences between diverse regions in terms of response and, perhaps more important, the need to work with scientists on the issues of crisis management and agency response. Scientists played a crucial role in 2003; they provided assistance and allocation of resources but also helped guiding public opinion which can be important. The speaker proceeded to discuss biosafety and biosecurity which it was suggested is difficult to put in place because of the speed at which biotechnology is progressing. Nonetheless a number of initiatives have been undertaken, these include the development of a code of conduct, and there are initiatives to improve export control outreach amongst industry, an activity inspired by the training program in the CTBTO. China has also been working on engagement with the synthetic biology industry, recognising that China is behind in terms of regulating synthetic biology.

The Third speaker outlined the Brazilian situation and began by distinguishing between what is probable and possible in the South American context and suggested that, as countries like Brazil were states parties to so many treaties, the possible was actually improbable in the region. Brazil and Argentina were working together to develop a material control and accounting system, but Brazil was reluctant to accept the Additional Protocol because there was a sense that the country had already done everything that was required of it and more, and in this sense he rejected the argument that Brazil should set the example for Iran. Rather it was hoped that there would be a way to accommodate international concerns and maintain credibility without signing an instrument they felt is too intrusive and thus too uncomfortable. This was particularly frustrating as the speaker indicated that Brazil has a bad record in a number of areas such as the environment and human rights, but remained at the top of the list, if not exemplary, in terms of no nuclear proliferation. The speaker concluded by suggesting that countries such as Argentina and Brazil are likely to become suppliers of nuclear products in the future, and it would be important to look at the NPTs complexities as this was, not just about non proliferation. The Fourth speaker agreed with many points made by the previous speaker, and reiterated that Brazil and Argentina were cooperating on a material control and accountability mechanism, which serves as a good example of a model arrangement. Although the speaker stated he was perhaps more sympathetic to the Additional Protocol personally, he too recognised the difficulties with the protocol and Argentina stood in solidarity with Brazil. He suggested also that there was a need to work with civil society and scientists who are part of the solutions, and have to be engaged from the beginning. The speaker concluded by suggesting that engagement activities could be a good way to bring the region more closely into Global Partnership activities, as currently the region was so low down, the list of regions of concern it was often overlooked.

In the discussion session the issue of the Additional Protocol was raised again and it was reiterated that South American countries had already given a great deal but this was too much particularly given the slow process of disarmament amongst nuclear powers and the asymmetry this creates. In relation to engagement, it was suggested that NGO leading engagement strategies were a useful first step but argued by one participant that there needed to be a paradigm shift in engagement and greater industry engagement was required.

Breakout Group Meetings

Key points

- There is a need to look beyond the traditional approaches to engagement;
- It is important to consider new technologies, in particularly to understand and respond to the challenges of cyber and nanotechnology, without neglecting old technologies;
- Non state actors remain important in threat assessments; new enabling technologies (principally IT) necessitate that access to and manipulation of certain weapons may become easier;
- The IWG could be used to build a community foundation, debating the plausibility of threats and discussing key issues;
- There is a need for greater coordination in activities;
- Engagement and outreach to a broad range of actors including scientists but also diplomats, administrators and other individuals who needed to be informed;
- Scientists can play a key role in disaster preparedness and need to be brought in as part of the solution.

The Breakout Group Meetings were designed to encourage broad participation and wrestle with some of the bigger picture questions, such as where do we go from here and what new ideas need to be covered.

Breakout Group 1 "Analysis of Post-Cold War Threats Beyond 2012 and Mechanisms to Address Them " –Summary

Breakout Group 1 concluded that in future scientists engagement post 2012, the IWG should go beyond traditional approaches to engagement in relation to CBRN, and consider emerging technologies. It was suggested that this could be achieved through a survey of the state of the scientific and technological developments in emerging areas, followed by consideration of the potential impacts of emerging technologies on CBRN and incorporation of CBRN into emerging capabilities. The group concluded that strategies for expanding scientists engagement should be designed to incorporate these findings. In the process of seeking to update threat assessments, the importance of non-state actors was evidently important, not least given the way that information technology has facilitated transcendence of geographic boundaries and empowered individuals in unprecedented ways.

Breakout group 1 proceeded to highlight specific concerns over certain technologies. Cyber security and nanotechnology were singled out. Regarding the former, it was suggested that breaches of cyber safety and security are not always externally apparent and public knowledge of them decreases public trust and/or drives down share prices. Therefore, victims of cyber incidents have a disincentive to report them. The need for a confidential "safe space" for organizations to report cyber-attacks was described, since learning alliances could lead to improved cyber defence capabilities. In terms of the latter, it was suggested that the regulatory structures to monitor and/or restrict access to nanomaterials and their synthesis are not in place, despite the danger posed by nanotechnology and its tremendous reactive surface area. Such examples serve to reinforce the idea that "control structures" in place for CBRN may be adaptable for emerging threats in some ways, yet dangerously ineffective in other ways and accordingly further work is required to ensure threats assessments and control regimes are updated and clearly articulated . Such a process of updating control regimes should not overlook tradition threats in seeking to design a new paradigm for understanding XXI Century challenges. For instance, the Fukushima accidents led one participant to remark that "three S's" (Security, Safety and Safeguards) are important for disaster preparedness, and need to be endorsed through an integrated approach.

The group concluded that both an external and internal series of activities could be carried in the future. In terms of internal activities three ideas were mooted, firstly using the IWG to build a common community foundation, through, for example bite sized introductory working papers on the state of the science or a specific global issue or event. Secondly, the IWG could be an open forum for presentation and discussion of topics falling along the continuum of Redirection—Engagement—Partnership—Collaboration—Integration or debating the plausibility of threats. Thirdly, the IWG could undertake specific case studies suggested by the IWG stakeholders. In terms of external activities, breakout group participants recognised that there was a clear role in terms of engagement and outreach to a broad range of actors including scientists but also diplomats, administrators and other individuals potentially caught up in the pathways of illicit trafficking.

Breakout Group 2 "Outreach SE Efforts in Euro Asia-Pacific-Latin America Regions" - Summary

Group 2 began by highlighting the technical nature of successful engagement projects and the long history of such activities. Indeed, it was suggested that cooperation on the technical proved to be far easier that the political and, as scientists already have channels of communication and know other scientists across borders who work on their topics, it would be advantageous to tap into this resource, and the GP should attempt to incorporate scientists from developing countries. Topics such as disaster preparedness could usefully be dealt with, and this is something which could be beneficial to all partners and reduces perceptions of the GP as being exclusive. Demonstrating success or failure in GP activities was also raised and it was noted that plans are in place to provide more anecdotes and pictures to make successes more tangible. Another avenue of thought was to establish metrics to measure successes and conduct 'fact findings missions'. However, later in the discussion it was mentioned that personal relationships are an integral part to the success of the GP and it is very hard to measure these relationships. Finally, the role of 1540 was cited as a helpful tool because it provides a legal framework that the GP can base its work on, as well as it outlines possible future directions the GP can work towards.

Breakout Group 3 "Qualitative and Narrative Analysis of the Current International, Multilateral and National Initiatives Aimed to Enhance and Expand a 'CBRNCy Non Proliferation Culture' " - Summary

The rapporteur for Breakout Group 3 suggested that there had been lots of information and sharing information, which was important; however, there are issues where there is a need to move from information sharing to greater coordination in order to ensure initiatives are complementary. To achieve this, it was suggested the Global Partnership and/or Ministries of Foreign Affairs could act as conduits or catalysts and that groups such as this could benefit from more clearly defined goals and shared language, as currently certain terms are disparately used. Clarity in definitions and conceptualisations would facilitate an understanding of the means to measures success and sustainability. In relation to metrics, it was pointed out that there are examples of initiatives that have failed which we need to learn from, as these point to the importance of using tools more readily understood and applied by scientists, such as peer review, but also champions. Incentives were also identified as important, particular in expanding to bring in other countries. In terms of the GP it was suggested that transition from country to country should be done carefully to ensure fluidity in presidencies and sustained coordination. Groups like this could facilitate that and provide valuable opportunities for information exchange and networking. Last, but not least, a participant of this Breakout Group suggested to use a Nuclear Security Summit-like model to enhance and strengthen a "global CBRNCy threat reduction" approach.

Closing Remarks

In the closing remarks it was stated that the meeting provided a good set of areas and ideas for action and great deal of food for thought. In this context, it was recognized that the IWG is a very relevant and essential instrument to assess the existing and emerging CBRNCy threats, and to provide, through its meetings, a platform of open discussions and effective coordination among all the concerned stakeholders dealing with the international security agenda. The IWG Secretariat expressed, in particular, the hope that further

NNSA&IWG – LNCV meetings will be organized beyond 2012 in the form of several consecutive events involving both the security and scientific communities, with the main goal to address globally, among others, the “material and human dimensions” to CBRNCy threats control and forecasting.

IWG Executive Secretariat Report on
International Working Group (IWG) Discussion:
Global Partnership (GP) – 2012 and Beyond

Four Points Pleasanton Hotel, Pleasanton, CA, October 22nd, 2012

This fourth and final 2012 meeting of the International Working Group conducted on the margins of the Global Partnership Working Group, under the US Presidency chaired by Amb. Bonnie Jenkins, was held in Pleasanton, CA on October 22, 2012. The IWG meeting enabled the Global Partnership countries to discuss informally, in partnership with representatives of the science community, a range of issues associated with global scientist engagement and other issues associated with the Global Partnership. This fourth IWG GP workshop in 2012 was specifically designed to assist GP countries shape effective policies on global scientist engagement in partnership with international organisations and the science community, looking at current concerns, new challenges, and status of GP efforts during the USG presidency.

As with previous IWG meetings this workshop was structured around a series of formal presentations from invited experts and associated panel sessions which allowed for detailed debate of the issues.

Key points and observations made during the workshop include:

- Effective scientist engagement underpins all aspects of CBRN security and non proliferation and is a key tool in reducing threats from the misuse of WMD materials and know-how, as well as to facilitate progress against cyber (Cy) attacks aimed at critical infrastructures, including CBRN assets. Therefore, scientists engagement is more than the 4th pillar of the GP agenda, and would need a comprehensive, coherent approach to facilitate its achievement in the obligations that the UN countries, including the GP parties, have vis-à-vis international treaties, conventions and other multilateral arrangements.
- The US initiative to involve a wide range of stakeholders interested in enhancing CBRNCy security through scientist engagement, was welcomed as an important step forward in helping shape the future work programme of the GP post 2012.
- The closer working relationship of the GP and the 1540 Committee was seen as an essential strategic priority to reduce global CBRNCy threats. However, what is needed is a clear set of activities and projects to support the 1540 which can act as a focus for GP support.

- The OPCW framework presented opportunities to strengthen global chemical security now that its main mission of destroying chemical weapons was approaching completion.
- It was vital that the global threats from emerging and converging technologies such as cyber and nano are addressed effectively, and that the GP had a clear role in ensuring appropriate methodologies were developed to address the threats they posed.
- The IWG framework was recognised by all participants as an invaluable tool to assist the GP to shape its priorities and to assure the continuity of its objectives. It also provided CBRNCy stakeholders with an opportunity to reach a consensus on the most effective ways of addressing future CBRNCy threats.
- Subject to appropriate funding, a key task of the IWG beyond 2012 will be to identify and suggest appropriate mechanisms to transform several recommendations stemming from its five 2012 meetings into concrete proposals on a portfolio of flagships projects and activities for the GP in the aftermath of the US GP Presidency. In this regard, the participants underlined that the next 2013 UK GP Presidency will face the challenges to realize some of the recommendations of these five 2012 IWG meetings.

Summary note of the meeting

In opening the fourth workshop, Ambassador Jenkins said that she would like to use the meeting to review the valuable discussions that have taken place over the past year, and explore potential thinking for 2013, when the UK assumes the GP presidency. Amb. Jenkins emphasised that scientists engagement was identified in 2011 as a key GP priority, and the GP still needed to focus on scientist engagement because it underpinned many security and non proliferation issues. The GP needed to make sure that this important work is funded and undertaken in a coordinated way. She also emphasised the importance for the GP to work closely with the 1540 Committee – a view reinforced in previous IWG meetings during 2012.

Previous IWG workshops highlighted the importance of engagement activities that built on engaging with international organisations as well as developing a robust understanding of the needs of partners and fostering good working relationships as a basis for effectively implementing programmes. This message was repeated throughout this workshop. International CBRN organisations were well represented, and their presence enhanced the quality and depth of the discussion.

The discussion of previous meetings highlighted the importance of involving the science community and international organisations in future meetings to focus GP priorities given funding constraints and avoid duplication, and above all raise awareness across the CBRNCy sectors of the importance of scientist engagement. All recognised the complexity of addressing scientist engagement and understood a portfolio of activities had to be constructed to inform and educate. The GP was seen as an invaluable framework to provide information exchange meetings to international organisations so that sharing of best practice and lessons learnt could take place in a neutral setting. The discussions, as with those at previous workshops, focused on the scope of scientist engagement; all recognised it was not simply a commercial relationship between individuals, but a much wider human dimension issue and not just confined to weapons scientists. Many recognised that the GP had done a great service in raising the concept of scientist engagement being a priority and that a lot of work had also been undertaken by the GP countries themselves working with the science community and international organisations. A number of activities undertaken by GP countries had not been classified as scientist engagement initiatives even though they had that dimension, and there was a need to ensure such work was appropriately recognised.

A number of participants emphasised that most scientists and technicians recognised very well that they needed to protect the sensitive information they had and prevent terrorists accessing facilities and materials for malevolent purposes. What was needed was a process that enabled best practice and lessons learnt to be second nature to all. Encouraging the sharing of best practice across the CBRN silos was an area where the GP had a clear role to play in partnering with international organisations.

The workshop also emphasised again the growing recognition that a whole government approach to harness scarce available resources and sharing best practice should be part of any effective programme on scientist engagement. The whole government approach also embracing international organisations.

The workshop also provided the opportunity for the GP community to discuss the considerable value of working in partnership with the 1540 Committee and the OPCW. Previous meetings had highlighted the scope for using GP framework to provide a route for the 1540 Committee to implement some key projects to assist states in implementing their 1540 obligations. The value of working more closely with the 1540 Committee was further reinforced by the discussions. It was reported that since the GP Stockholm meeting in September the 1540 Committee has been working on a paper on opportunities for collaboration between the GP and 1540. The presentation and discussion on OPCW provided a valuable insight of the potential scope for using it to enhance chemical global security culture. Both the discussions on 1540 and OPCW highlighted a number of concrete issues for the UK to take forward under its Presidency of the GP in 2013.

The workshop also discussed future priorities including emerging and converging technologies, particularly nano and cyber technologies. The discussions covered a number of the technical aspects of the technologies and the potential security implications of their malevolent use. Most agreed that the GP needed to consider these technologies and whether they should be part of the GP's agenda..

The final session of the workshop reviewed a number of ways the IWG might be improved to increase its value to the GP community. All felt the neutral environment offered by the IWG was an ideal forum for candid discussion and comment, particularly acting as an incubator for hearing new ideas and influencing the way people develop policies on engagement issues – including metrics. Some felt the IWG could usefully produce a report around 3-4 times a year on what has been done. Others commented that because there are different GP Presidencies and no standing secretariat the work of the IWG provides a valuable continuity. Unlike the formal GP meetings the IWG meetings involve broad range of officials, scholars, diplomats and industry representatives who are able to share best practices and share information in a non political environment.

SUMMARY OF RECOMMENDATIONS FOR SHAPING FUTURE GLOBAL PARTNERSHIP (GP) INITIATIVES ASSOCIATED WITH SCIENTIST ENGAGEMENT ARISING FROM INTERNATIONAL WORKING GROUP (IWG) EVENTS IN 2012

Preliminary remarks

During 2012, a series of workshops were organised under the auspices of the International Working Group (IWG) and under the US chair of GP, Ambassador Bonnie Jenkins, to informally discuss how the Global Partnership (GP) framework, established at the 2002 G8 summit at Kananaskis, could best be used to enhance the global effort to address future CBRN threats and challenges associated with scientist engagement – especially the GP's role in encouraging collaboration and coordination of such efforts. The portfolio of workshops involved a wide range of GP country officials and CBRN experts as well as representatives from the science community, US and international non government organisations and invited participants from future potential GP members. The workshops took place in January, March, April and September, the latter organized under the auspices of the NNSA. Each workshop focused on a narrow range of topics to enable appropriate time for identifying the key challenges and opportunities each topic presented. **The importance of engagement with the science community, international Government Organisations, NGOs and the private sector to help shape effective CBRN policies was a consistent feature of all the meetings**. These workshops also identified a number of common tools to help implement future GP projects, as well as measuring the impact of the proposed interventions and activities.

This document summarises the key observations and recommendations arising from the discussions at the four workshops[2] . In particular, it summarises the considerable benefits and opportunities the discussions highlighted for using the IWG and GP frameworks to address global CBRN challenges beyond 2012. The GP's continued role to act as a focus for coordination and collaboration for addressing CBRN threats was stressed at all the meetings. In particular, the GP was seen to complement the work of the international CBRN-focused Government Organisations by providing an overarching policy framework with direct links to the political summit process of the G8 and nuclear security summit. It was also seen as an invaluable network of CBRN experts from both the policy and project management fields. Importantly, it provided awareness of the financial and technical resources available to help progress the development of projects to support UNSCR1540 and other CBRN initiatives that had a global focus. Participants at the workshops also recognised the diplomatic opportunities offered by the GP in explaining the benefits of international collaboration on CBRN issues to countries yet to embrace involvement in any meaningful way.

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[2] Reports for each workshop are available from the IWG Executive Secretariat at the Landau Network Centro Volta (LNCV), Como, Italy.

The discussions and the recommendations that arose from these meetings should provide valuable guidance on shaping concrete programme and flagship projects associated with scientist engagement which can then be taken forward under UK chair of the GP Working Group in 2013.

A detailed set of the key recommendations and observations that arose from the four workshops is presented at Annex A. Despite a differing mix of participants at each workshop a consistent core of key observations and recommendations were identified from the workshop discussions and these are briefly summarised below. If these are taken forward they have the potential to considerable strengthen the way scientist engagement initiatives are implemented by the GP community in future as it moves from a focus largely addressing CBRN priorities in the Former Soviet Union (FSU), to one with a global approach. While the observations and recommendations apply specifically to work on scientist engagement, many are likely to be applicable to other project areas that the GP is expected to implement over the next few years. These include the importance of effective coordination and sharing of lessons learnt, creation of an effective metric framework for projects and programmes, involving a broad range of stakeholders at an early stage, and sharing of information and best practices across the CBRN silos.

All participants at the workshops recognised that one of the main challenges for the GP is moving from a programme largely focused on Russia and the wider FSU involving, in the main, a comparatively few very large costly projects, to one involving a large number of comparatively small, low cost projects with a global focus. Such a change in scope and direction will require new approaches (particularly associated with a range of different cultures and legal frameworks), wider collaboration involving new GP countries, and greater coordination to be effective – particular to avoid duplication of effort among GP funding agencies. **While the portfolio of IWG workshops did not come up with a clear route map for the next stage of the GP work on scientist engagement (this was not their remit), they certainly highlighted a comprehensive set of features that future scientist engagement programmes would need to take account of to ensure their effective implementation.**

Key observations and recommendations identified from the workshop discussions

a) The IWG meeting structure was seen by many participants as a valuable forum for debating and highlighting priorities across all CBRN fields and not those solely confined to scientist engagement activities for which the IWG already has a strong track record of policy analysis. A particular strength identified for the IWG framework was that it allowed GP countries to seek the views and lessons learned from international Government Organisations and specialists from across the different CBRN sectors in a neutral forum under "Chatham House rules". This interaction with the international Government Organisations (WHO, IAEA, FAO etc) highlighted the importance of involving them in a dialogue with the GP community to ensure the continued relevance of future GP projects and programmes. Furthermore, the international GOs have indicated that they greatly welcome the opportunity to participate in the various GP discussions including those of the IWG. A recommendation that naturally flows from this observation would be for the GPWG to:

Invite the international GOs to at least one session of its policy and programme discussions each year and identify how their expertise can contribute to the design and implementation of GP flagship projects

b) Several of the meetings emphasised the value of a "whole government approach" to addressing bio security alongside measures to enhance animal and human health, and is an approach more likely to lead states supporting initiatives which also enhance bio-security. Similar "common sense approaches "apply in all CBRN sectors particularly the need for effective communication and collaboration with all Agencies within a state and international Bodies who have day to day experience of the issues. Several of the workshops highlighted the importance of a multi stakeholder approach which further emphasises the importance of involving, at an early stage, a broad audience in shaping and participating in scientist engagement programmes. A common sense recommendation that naturally flowed from the discussions on the whole government approach is therefore:

A "whole government approach" also involving all relevant stakeholders offers considerable benefits to GP countries both through sharing lessons learnt and more effective use of resources

c) Several of the meetings emphasised the value of using the National Science and Engineering Academies to advice on programme development to ensure professional responsibility is embedded in all levels of a scientists training and education. Engaging with young scientists at an early stage in their career offers considerable opportunities to promote a robust security culture across all CBRN sectors. This is an area where private industry also needs to be engaged working with the academies to ensure best practice can be embedded across the CBRN fields. A recommendation that naturally flows from these observations would be:

Education and specific training efforts have a strong role to play in enhancing a robust security culture and awareness of the security issues associated with CBRN materials and know–how, in particular CBRN-focused programs (and credits) should be integrated into all relevant scientific and technical courses – and reinforced via induction courses when scientists and engineers etc commence their careers

d) Two of the workshops highlighted the opportunities for the GP to work more closely with the 1540 Committee with the GP programme implementing projects and initiatives which supported the objectives of 1540. Four priorities were identified for the GP including facilitation of 1540, the submission of consolidated lists of assistance reports and capacity building to facilitate the Resolution's implementation. A recommendation that naturally flows from the discussion of 1540 would be:

Now that the mandate of the 1540 Committee has been extended for a further ten years from April 2011, it is timely to identify how the GP framework can provide practical support to underpin 1540 objectives with a concrete portfolio of flagship projects to commence in 2013

e) The workshops paid particular attention to the issue of metrics since measuring the impact of scientist engagement initiatives was not a straightforward task. Participants recognised there were a range of approaches that could be used to shape a portfolio of metrics for engagement projects and the US Academies of Sciences report on metrics was widely seen as providing invaluable up to date guidance. It was also recognised that developing metrics for bio-security posed quite different challenges to that for nuclear projects. The value of collaborating with international GOs such as the WHO to make use of their data also offered opportunities to widen the effectiveness of measuring the sustainability of bio-security programmes. The sharing of best practice with respect to metrics is an area the GP is well positioned to lead on. A recommendation that naturally flows from the discussion on metrics would be:

Designing effective metrics for scientist engagement projects will need careful construction to be meaningful, but the recently completed US Science Academies report provides some useful guidance. The experience and datasets of international GOs may also provide guidance for measuring the sustainability of bio-security programmes

f) All the workshop discussions highlighted the importance of effective coordination by the GP of the scientist engagement activities and the requirement to ensure awareness of these activities to a range of stakeholders in government, the science community, industry and the educational sectors. It was also recognised that the rapid growth of Nuclear

Security Centres of Excellence and the EU CBRN Centres of Excellence presented both an opportunity and a challenge to optimising coordination and awareness raising. A recommendation that naturally flows from the discussion of this topic would be:

The GP framework's strength is its unique position to reach out to most if not all of the key players involved in CBRN threat reduction, and broadly speaking in CBRN risk mitigation, and certainly all those actively engaged in scientist engagement initiatives. Its awareness raising and coordination role would be enhanced by ensuring its database of projects and programmes is kept up to date and the IWG could have an important role in maintaining a database of scientist engagement activities.

g) The IWG has demonstrated it can provide an invaluable non political and neutral forum for discussing a range of policy options related to scientist engagement, especially with respect to building and strengthening networks, and assessing the potential impact of new activities. The discussions also identified the potential role the IWG could have in helping think through not only the security dimensions of the new nano and cyber threats, but also how those threats impact on traditional CBRN concerns. A recommendation that naturally flows from the discussion during 2012 would be:

The IWG should continue to provide a focus for discussion on scientist engagement issues particularly those associated with new and emerging technologies and how they might impact on traditional CBRN concerns.

Annex: Summary of the key points arising from the five IWG events in 2012

23rd January IWG Meeting, Washington, US

The key theme of the January meeting involving international Government Organisations and representatives of the science community was scientist engagement. Points highlighted in the discussion included:

- Not just about scientists, but their support teams and all those that work in an environment where sensitive information and materials used and stored – need a holistic approach to promoting professional responsibility
- Importance of using the National Science and Engineering Academies to advise on programme development and ensure professional responsibility embedded in all levels of a scientists education and training
- Involving a wide range of government interests in engagement projects has considerable political and financial benefits
- Importance of understanding the needs of partner countries first before establishing projects and programmes
- While metrics were important from a project management point of view, for engagement activities care needed to be taken in attempting to impose numerical measures on outputs which were often subjective and difficult to measure
- The Centres of Excellence Networks, not only the EU inspired ones, present opportunities to raise global awareness of scientist engagement work
- The IWG provides a valuable non political and neutral forum for discussion of GP-related issues

12th March IWG Meeting, Boston, US

The March meeting further explored a range of issues associated with how best to establish a portfolio of scientist engagement projects globally and the challenges facing such a global approach. Points highlighted included:

- New approaches on scientist engagement were needed in which scientists themselves were involved in developing best practices, training programmes and other measure that embraced the full spectrum of CBRN issues
- The importance of identifying champions in industry and government agencies

- The step by step approach recommended for enhancing collaboration in South America was seen as an effective way to highlight the benefits of GP membership in the region
- A “whole government approach” to addressing bio-security, alongside measures to enhance animal and human health, is more likely to lead to states supporting initiatives which also enhance bio-security
- While a range of mechanisms existed to shape the development of metrics for engagement projects they could never provide a fully definitive statement of the impact they might have. What was important was they focused on measurement criteria people could relate to and that metrics are constantly re-evaluated and refined, as strategic priorities and programmes evolve.
- The IWG was an invaluable forum to discuss informally a range of policy options which GP countries might consider for future scientist engagement efforts – especially with respect to building and strengthening networks, assessing the potential impact of new activities, and ensuring that the right actors are involved in engagement activities.

16th April IWG Meeting, Miami, US

A key theme of the April meeting was the importance and associated challenges of raising awareness across a wide range of sectors about the security of CBRN materials, equipment and know-how, including transportation security. Points highlighted in the discussion included:

- A “whole government approach” could usefully be applied to the GP process and also usefully expanded to a “whole of society approach” to involve other relevant stakeholders including industry, law enforcement, civic society and think tanks etc
- The need now to consider new challenges such as cyber terrorism and the developments in nanotechnology as part of a holistic approach to addressing CBRN challenges, including a fresh rethinking to the global chemical security
- The need to raise awareness of security requirements to a wide range of personnel involved in the CBRN supply chain
- Being able to measure the impact of interventions was an important part of awareness raising especially to states and organisations who need to be persuaded of the benefits of such interventions

- The need to involve private industry in future non proliferation programmes especially engagement initiatives where there were strong synergies between commercialisation and proliferation prevention interests
- Scientist are part of the solution and not part of the problem when addressing CBRN risks and engagement with scientists both raising awareness of, and contributing to improving security of CBRN materials and know-how
- Education and focused training have a strong role to play in enhancing security and initiatives to raise awareness and engaging with young scientists and students at an early stage in their education and career offers considerable opportunities to promote a robust security culture across all CBRN sectors.
- The GP framework offers considerable opportunities to assist the UNSCR1540 Committee by supporting and implementing projects which facilitate the Resolution's implementation.

13th-14th September, IWG-NNSA Workshop, Como, Italy

One of the main themes of the September workshop done under the auspices of the US-NNSA, was focused on how government, industry and the science community could work together to deal with the threats and challenges posed by emerging and converging technologies such as cyber-security, nanotechnology and neurobiology. The gathering included a series of other issues discussed included

Points highlighted in the discussion included:

- There is a need to look beyond the traditional approaches to engagement and consider emerging technologies
- As well as identifying the human dimension issues associated with the nano and cyber threats, the IWG framework could be used to help identify how such threats impact on traditional CBRN concerns
- The advance, convergence and diffusion of different technologies requires a multi-stakeholder approach
- The huge diversity of threats and challenges meant that the science and security communities needed to work together in a cooperative manner and develop a shared understanding of each other's concerns
- The importance of a global approach to scientist engagement addressing CBRN challenges in a holistic way irrespective of whether they were natural, accidental or deliberate

- The importance of greater coordination to ensure initiatives are complementary and avoid duplication of effort
- The importance of awareness raising to a broad audience beyond just the science community involving diplomats, industry and educational bodies etc
- Importance of "champions" to allow institutional leadership and creating respected "messengers"
- Education, training and awareness raising are an important foundation for many measures to deal with dual use
- The IWG could be used to build a "community foundation", debating the plausibility of threats and discussing key issues of security concern, as well as to stimulate the international community and GP to adopt a framework agreement promoting a good "CBRN–governance" worldwide
- The Nuclear Security Summit with its presidential endorsement could be a model to promote in a next future a "CBRN Security Summit" with an associated "gifts package" by the interested states

22nd October IWG Meeting, Pleasanton, US

This 4th IWG GPWG sideline meeting has been the most looking forward of the IWG GP meetings and, due to its endorsing by the US GP Presidency since its inception in DC last January 2012, it has clearly underlined that the US GP Presidency will be regarded as a game changer from a silos-dominated agenda to an effective global approach correlated to the issues forming the scope of the GP-process beyond 2012. Some key points for the US-leading "whole-of-government "approach to the GP discussed in the meeting were the following:

- Scientists Engagement (SE) is more than the 4th pillar of the GP agenda. Indeed, scientists engagement is underpinning also the other pillars, like the nuclear security, chemical security, biosecurity, etc. In this sense, SE is the key tool to reduce the CBRN threats and, after the seminal NNSA- IWG workshop held in Como last September 2012, also the CBRNCy challenges generated by the illicit use of material, equipment, technology, sensitive information (i.e. know-how and expertise) related to the classical CBRN sectors and to the use of *Zero Day Exploits (ZDE)* by malware against CBRN assets. Recognizing that, it means at the GP official level to enhance education and awareness, as well professional responsibility.
- Under the US Presidency, the past trend to involve more proactively the International Organizations (IAEA, WHO, OPCW, ISU-BWC, OIE etc.) has become a practice and an essential tool to reduce CBRNCy threats in the post-Kananaskis

age. Furthermore, the US has endorsed the past recommendations of the IWG to involve effectively the scientific community as part of the solution and not as part of the problem.

- The merging of the 1540 Committee and GP objectives will become an essential strategic priority to reduce the global CBRNCy threats by demanding tailored commitments at national levels. It is foreseeable that, in the forthcoming future, the 1540 Committee could become, together with the IOs, the essential arm of the GP for implementing its objectives.
- The IWG has been recognized by all participants as an essential tool to help the GP to select its priorities and to create a "common foundation" done by diplomats , GP and IOs officials, scientists, scholars, private sectors representatives, etc.

Participants of the meeting have discussed about how the OPCW could become, in a foreseeable future, the right Body to strengthen the global chemical security, since its founding mission of destroying chemical weapons is almost ended with the destruction of about 85% of the worldwide CWs stockpile. Furthermore, the convergence of bio and chemical technologies in the toxicology sectors has raised the risk of using new CWs with enhanced deadly effects by non-state actors. In this regard, the US GP Presidency has launched a "Chemical Working Group" to re-push a modern thinking about the CW threats.

The out-the-box and most looking forward issues discussed during the IWG GP gathering of October 22nd were the challenges posed by the emerging and converging technologies (including, among others, nanotechnologies, synthetic biology, neurosciences, cyber technologies, etc.) and how these affect standard CBRN domains and SE. These technologies require a new GP-methodology, suitable tailored metrics to evaluate the new projects, a "whole-of-government" approach, etc.

The participants agreed that the key task of the IWG beyond 2012, if it will be properly funded, should be to act as a clearing house for these emerging and converging technologies. Moreover, the IWG should try to transform several recommendations stemming from these five 2012 meetings in concrete proposals concerning a portfolio of flagship projects and activities for the GP in the aftermath of the US Presidency. In this regard, the next 2013 UK Presidency will face the challenge to realize some of the recommendations of these five 2012 IWG meetings.

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